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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/848,967	05/04/2001	Emanuel Calenoff	21417/92378	6936

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EXAMINER	
CHEU, CHANGHWA J	
ART UNIT	PAPER NUMBER
1641	

MAIL DATE	DELIVERY MODE
06/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/848,967	CALENOFF ET AL.	
	Examiner	Art Unit	
	Jacob Cheu	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) *4-16, 20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,17-19,21 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

2. Applicant's amendment filed on 3/23//2007 has been received and entered into record and considered.

The following information provided in the amendment affects the instant application:

Claims 1-3, 17-19 and 21-22 are under examination. Claims 4-16, 20 are withdrawn from further consideration.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Geysen et al. (J. Mole. Recog. 1988, Vol. 1, page 32-41) as evidenced by Tanner et al. (US 5256410).

With respect to claims 1-3, the instant claims direct to a plurality of immunogenic peptides of a target protein. It is a *product* claim (emphasis added). Geysen et al. teach a plurality of immunogenic peptides of a target protein human alpha-2 interferon, including DETLLD, DQTLLD, DETLMD and DETLLR hexapeptide (6 amino acid in length),

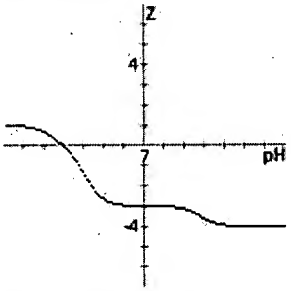
where these peptides are identical to a contiguous amino acid peptide region of the human alpha-2 interferon and have net hydrophilicity (See Figure 1, note the replacement in each selected hexapeptide still maintain the activity). See below hydrophilicity calculation (http://www.innovagen.se/custom-peptide-synthesis/peptide-property-calculator/peptide-property-calculator.asp Note, this website is for calculation of hydrophilicity of peptides).

Interpreted sequence
1-letter code: DETLLD
3-letter code: Asp-Glu-Thr-Leu-Leu-Asp

Number of residues: 6

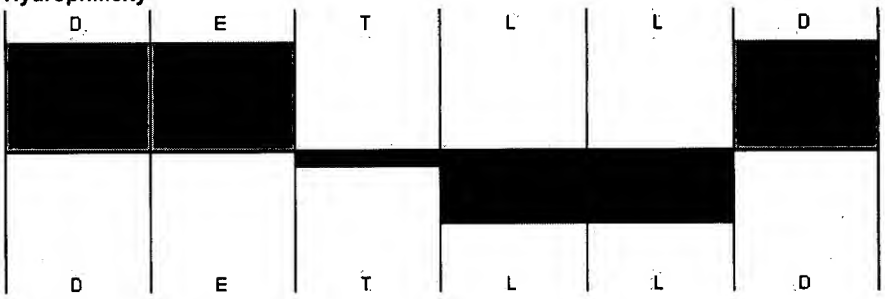
Molecular weight, MW: 704.7

Net charge



Net charge at pH 7.0:-3
Iso-electric point, pI:2.9

Hydrophilicity Hopp & Woods



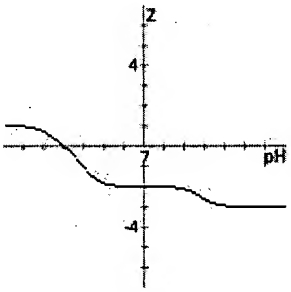
Average hydrophilicity: 0.8
Ratio hydrophilic residues / total number of residues: 50%

Interpreted sequence
1-letter code: DQTLLD
3-letter code: Asp-Gln-Thr-Leu-Leu-Asp

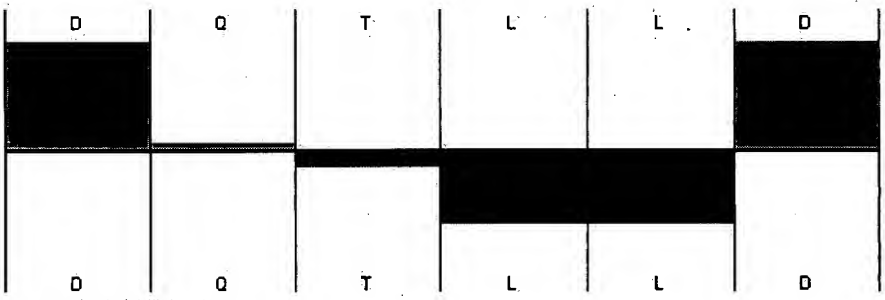
Number of residues: 6

Molecular weight, MW: 703.7

Net charge **Hydrophilicity** Hopp & Woods



Net charge at pH 7.0:-2
Iso-electric point, pI:2.9



Average hydrophilicity: 0.4
Ratio hydrophilic residues / total number of residues: 50%

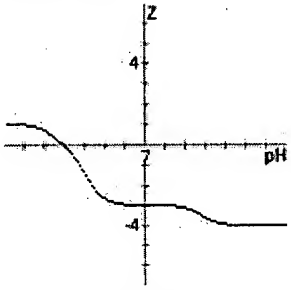
Peptide
Request quotation!
N-terminus
Sequence (in either 1- or 3-letter-code)
C-terminus
(NH2-)
DETLMD
(-COOH)
Calculate
Please denote modified amino acids by enclosing them in parentheses; e.g. (pS) or (pSer) for a phosphorylated Serine.

Interpreted sequence
1-letter code: DETLMD
3-letter code: Asp-Glu-Thr-Leu-Met-Asp

Number of residues: 6

Molecular weight, MW: 722.8

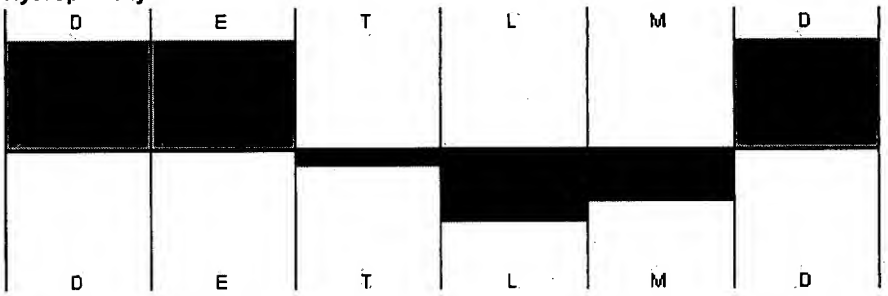
Net charge



Net charge at pH 7.0:-3
Iso-electric point, pI:2.9

Hydrophilicity

Hopp & Woods



Average hydrophilicity: 0.9
Ratio hydrophilic residues / total number of residues: 50%

Peptide
Request quotation!
N-terminus
Sequence (in either 1- or 3-letter-code)
C-terminus
(NH2-)
DETLLR
(-COOH)
Calculate
Please denote modified amino acids by enclosing them in parentheses; e.g. (pS) or (pSer) for a phosphorylated Serine.

Interpreted sequence
1-letter code: DETLLR
3-letter code: Asp-Glu-Thr-Leu-Leu-Arg

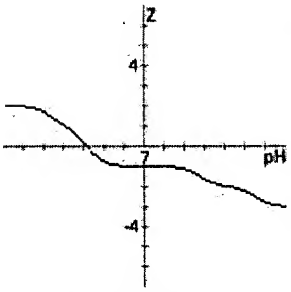
Number of residues: 6

Molecular weight, MW: 745.8

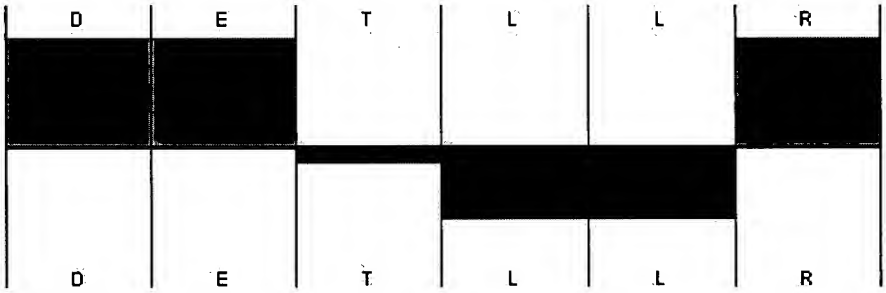
Net charge

Hydrophilicity

Hopp & Woods

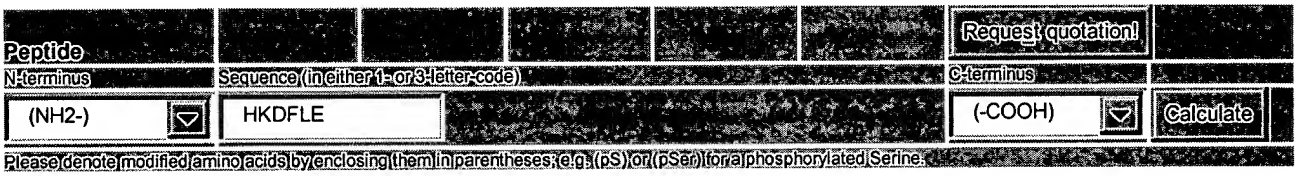


Net charge at pH 7.0:-1
Iso-electric point, pI:4.1



Average hydrophilicity: 0.8
Ratio hydrophilic residues / total number of residues: 50%

Geysen et al. also use a related non-target peptide, i.e. HKDFLE from myohemerythrin where the homology to the above mentioned human alpha-2 interferon peptides are less than 50 percent (See Figure 1 and compare the five peptides). It is inherent that this hexapeptide is located on the surface of the protein due to it net hydrophilicity (Also See Table 3). See following hydrophilicity calculation. Note, applicant also states selecting the "net hydrophilicity" peptides for the invention (See page 2, line 32 to page 3, line 25; Table 1, step 4-5).

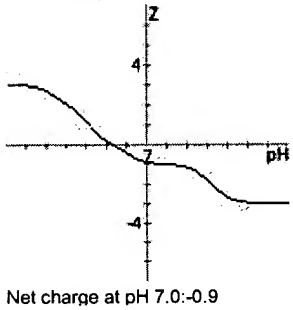


Interpreted sequence
1-letter code: HKDFLE
3-letter code: His-Lys-Asp-Phe-Leu-Glu

Number of residues: 6

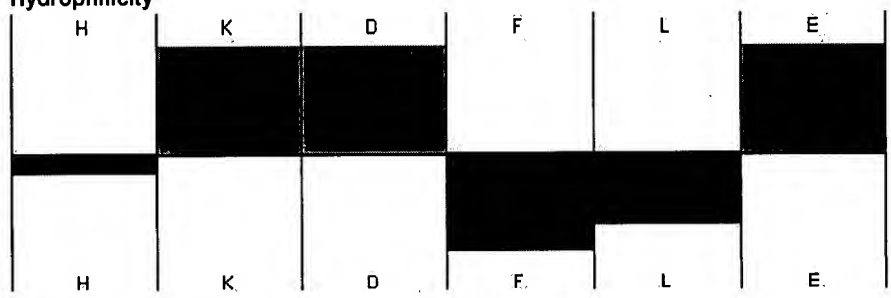
Molecular weight, MW: 787.9

Net charge



Net charge at pH 7.0:-0.9

Hydrophilicity Hopp & Woods



Average hydrophilicity: 0.7

Iso-electric point, pI:5.2 Ratio hydrophilic residues / total number of residues: 50%

The alpha2-interfereon has been associated with immunodefense to variety of disease, including cancer, such as squamous cell carcinoma, as evidenced by Tanner et al. (Col. 1, line 50 to Col. 2, line 60). Each of the human alpha-2 interferon peptides as discussed above would elicit immune response specific for the disease and can be used for detection purpose using patients' fluid samples, e.g. serum.

With respect to claim 17, interferon has been shown anti-microbial activity (See Tanner et al.; Col. 1, line 40-42).

5. Claims 1-3, 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Burnie et al. (US 6039959).

With respect to claims 1-3, Burnie et al. teach a plurality of immunogenic peptides of a target protein beta *ureB*, including EDWGTTP (7 amino acid in length) and EVGKVA (6 amino acid in length) where these peptides are identical to a contiguous amino acid peptide region of the urease gene of H. pylori (Col. 1, line 30-46; Table 4 SEQ ID No. 6 and 11)(emphasis added). See following hydrophilicity calculation.

Peptide | Request quotation!

N-terminus | Sequence (in either 1- or 3-letter-code) | C-terminus

(NH2-) | EDWGTTP | (-COOH) | Calculate

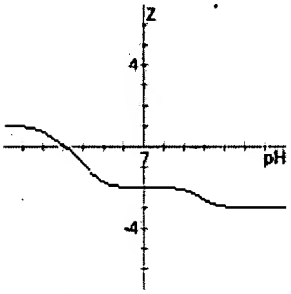
Please denote modified amino acids by enclosing them in parentheses; e.g. (pS) or (pSer) for a phosphorylated Serine.

Interpreted sequence
1-letter code: EDWGTTP
3-letter code: Glu-Asp-Trp-Gly-Thr-Thr-Pro

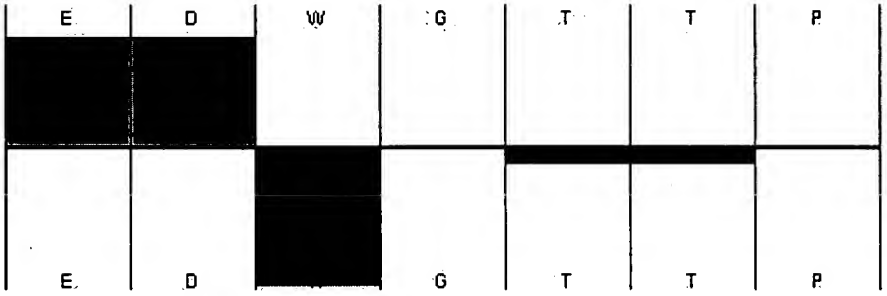
Number of residues: 7

Molecular weight, MW: 804.8

Net charge **Hydrophilicity** Hopp & Woods



Net charge at pH 7.0:-2
Iso-electric point, pI:3



Average hydrophilicity: 0.3

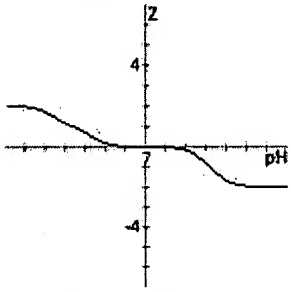
Peptide
Request quotation!
N-terminus | Sequence (in either 1- or 3-letter-code) | C-terminus
(NH2-) | EVGKVA | (-COOH) | Calculate
Please denote modified amino acids by enclosing them in parentheses; e.g. (pS) or (pSer) for a phosphorylated Serine.

Interpreted sequence
1-letter code: EVGKVA
3-letter code: Glu-Val-Gly-Lys-Val-Ala

Number of residues: 6

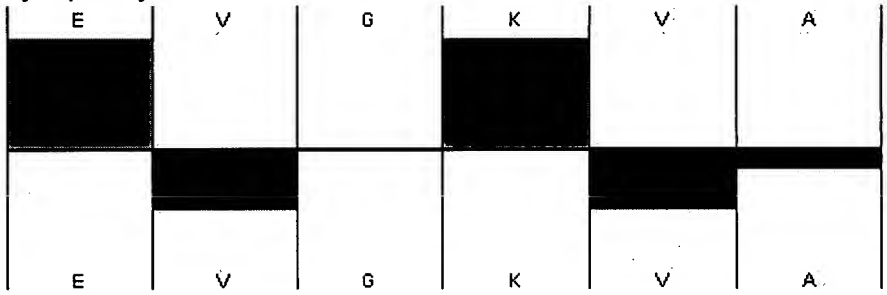
Molecular weight, MW: 601.7

Net charge



Net charge at pH 7.0:0
Iso-electric point, pI:6.9

Hydrophilicity Hopp & Woods



Average hydrophilicity: 0.4
Ratio hydrophilic residues / total number of residues: 33%

Burnie et al. also use a related non-target peptide, i.e. alpha *ureA* DIGGNRR, where the homology to the above mentioned EDWGTTP and EVGKVA peptides are less than 50 percent (See Table 4 and compare the three peptides). The net hydrophilicity of DIGGNRR is as following:

Peptide
Request quotation!
N-terminus | Sequence (in either 1- or 3-letter-code) | C-terminus

(NH2-) DIGGNRR (-COOH) Calculate

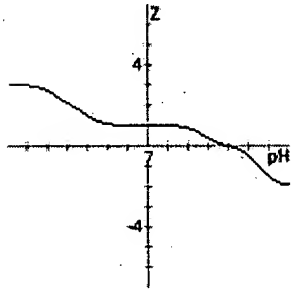
Please denote modified amino acids by enclosing them in parentheses, e.g. (pS) or (pSer) for a phosphorylated Serine.

Interpreted sequence
1-letter code: DIGGNRR
3-letter code: Asp-Ile-Gly-Gly-Asn-Arg-Arg

Number of residues: 7

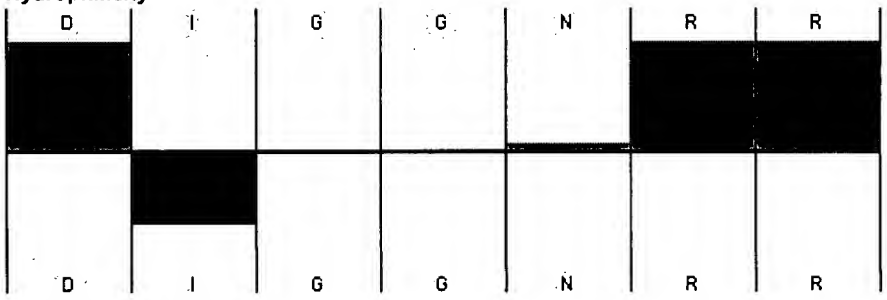
Molecular weight, MW: 786.8

Net charge



Net charge at pH 7.0:1
Iso-electric point, pI:10.9

Hydrophilicity Hopp & Woods



Average hydrophilicity: 1.1
Ratio hydrophilic residues / total number of residues: 57%

It is inherent that this peptide is located on the surface of the protein due to net hydrophilicity. The H. pylori has been associated with a variety of diseases, such as gastric ulcer (Col. 1, line 6-10). Each of the FISP and EVGKVA peptides as discussed above would elicit immune response specific for the disease and can be used for detection purpose using patients' fluid samples, e.g. serum.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gyesen or Burnie et al. in view of Hasegawa et al. (US 4606857).

Geysen and Burnie et al. references have been discussed but do not explicitly teach coupling the selected peptides with an adjuvant molecule to enhance immunogenicity of the peptide.

Hasegawa et al. teach coupling a muramyl molecule to a peptide to enhance immunogenicity reaction. (See formula I, and col. 1, line 32-42) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Geysen or Burnie et al. with the adjuvant molecule as taught by Hasegawa et al. to increase the efficacy of immunogenicity sine it is well-known and common practice in the art to couple adjuvant molecule with the peptides for enhancement of immunogenicity.

4. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geysen or Burnie et al. in view of Tu et al. (US 5674483).

Geysen and Burnie references have been discussed but are silent in teaching prescribing the effective peptides as a desensitizing agent for therapy purposes.

Tu et al. teach a method of administering IL-2 in an effective amount to desensitize airway hyperactivity and subsequently prescribing IL-2 increasingly to induce immune tolerance to the specific respiratory antigens. (Col. 2, line 15-45) Tu et al. reveal that this method provides the advantages of less side effects and less toxicity for immunotreatment. (Col. 2, line 1-10) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the immunoeffective peptides of Geysen or Burnie et al. with the desensitizing method as taught by Tu et al. to reduce the immune tolerance, and decrease side effects and toxicity for the treatment.

Response to Applicant's Arguments

5. Applicant's arguments with respect to claims 1-3, 17-19 and 21-22 have been considered but are moot in view of the new ground(s) of rejection.

The rejection on the term "comparative protein" under 35 USC 112, second paragraph, is withdrawn because applicant amended the claim language and has support from specification.

The enablement rejections under 35 USC 112, first paragraph is withdrawn in view of the amendment.

Conclusion

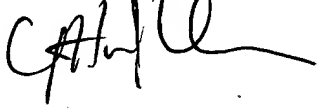
6. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Cheu whose telephone number is 571-272-0814. The examiner can normally be reached on 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jacob Cheu
Examiner
Art Unit 1641



June 7, 2007